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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/765,990

01/29/2004

Terence W. Barrett

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02/26/2009

BACON & THOMAS, PLLC

625 SLATERS LANE

FOURTH FLOOR

ALEXANDRIA, VA 22314-1176

EXAMINER

SAMUEL, DEWANDA A

ART UNIT

PAPER NUMBER

2416

MAIL DATE

DELIVERY MODE

02/26/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/765,990

Applicant(s)

BARRETT, TERENCE W.

Examiner

DEWANDA SAMUEL

Art Unit

2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 is/are allowed.
- 6) ☒ Claim(s) 1, 4 and 6 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5, 7-9 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This communication is responsive to the communication received on 12/17/2008.
2. **Claims 1-11** are pending.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/04/2008 has been entered.

Claim Objections

4. **Claim 11** is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The indicated allowability of claims 1,4 and 6 is withdrawn in view of the newly discovered reference(s) to Kjeldsen et al. (US Patent 7,206,359) in view of

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Ketchum et al. (US Patent 6,760,388) and Faroudja et al. (US Patent 5,940,141) and Qian (US Patent 5,910,905). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1,4 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kjeldsen et al. (US Patent 7,206,359) in view of Ketchum et al. (US Patent 6,760,388) and Faroudja et al. (US Patent 5,940,141) and Qian (US Patent 5,910,905).

With regard to claims 1 and 6, A method for increasing an effective communications channel bandwidth beyond that of a constrained physical bandwidth, and thereby increasing a spectral efficiency and a data rate of a channel, and/or a power efficiency of the channel, by orthogonal signal spectrum overlay (OSSO) comprising the steps of: decomposing a time-bandwidth product (TBP) of a given symbol in a data stream transmitted through a given physical bandwidth (**Kjeldsen et al. discloses having a system and method for**

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orthogonally multiplexed signal transmission and reception, see title.

Kjeldsen et al. further discloses having a direct sequence pseudonoise signal (DSPN) , the data symbol are decomposed in time with short chips interpreted as “time-bandwidth product” utilizing the entire data bandwidth interpreted as a “physical bandwidth” , see col. 18 lines 35-67).

However, Kjeldsen does not explicitly discloses basis set constituting eigensignals of said symbol such that the eigensignals resulting from decomposition,(**Ketchum et al. discloses having a time-domain transmit and receive processing with channel eigenmode decomposition for MIMO systems , see title. Ketchum et al. further disclose having single value decomposition which is used to decompose the MIMO channel into its eigen modes, see col. 9 lines 42-67).**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to implement eigenmode decomposition which is taught by Ketchum et al. into Kjelsen et al. wireless communication system whereby separating symbol streams into more simple and equalized format thereby achieving high throughput.

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The combination of Kjeldsen and Ketchum et al. does not teach non-linear expansion, **(Faroudja et al. discloses having a non-linear vertical bandwidth expansion of video signal, see title).**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to implement a non-linear expansion technique which is taught by Faroudja et al. into the modified wireless communication system that is taught by Kjelsen et al. in combination of Ketchum et al. spectrally expanding a signal bandwidth whereby increasing the quality of the signal.

The combination of Kjeldsen Ketchum and Faroudja et al. does not teach of said TBP of said symbol are overlaid in both time and frequency domains and occupy a same physical space, **(Qian et al. discloses having a time-frequency representation of a signal interpreted as " TBP " , see fig. 4 and col. 9 lines 26-50).**

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to implement a time-frequency representation of a signal which is taught by Qian et al. into the modified wireless communication system that is taught by Kjelsen et al. in combination of Ketchum and Faroudja detecting signals that considered to be a match if within the same time and frequency domain thereby increasing high throughput .

With regard to claim 4, in combination Kjeldsen, Ketchum et al. , Faroudja et al. and Qian et al. teaches the method recited in claim 1. wherein the complete data stream is multiplexed to produce a plurality of data channels, each of which is encoded on orthogonal signals, (**see col. 6 lines 39-45, a symbol stream is demultiplexed into parallel channels**).

Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dress et al. (US Patent 7,092,440)

Baun et al. (US Patent 5,828,660)

Brunner et al. (PG PUB 2003/0108028)

Cooper et al. (US Patent 4,222,115)

Allowable Subject Matter

8. **Claims 2,3,5 and 7-9** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 10 and 11 are allowed over prior art

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEWANDA SAMUEL whose telephone number is (571)270-1213. The examiner can normally be reached on Monday-Thursday 8:30-5:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q. Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ricky Ngo/
Supervisory Patent Examiner, Art
Unit 2416

Art Unit: 2416

/DeWanda Samuel/
Examiner, Art Unit 2416
2/26/2009